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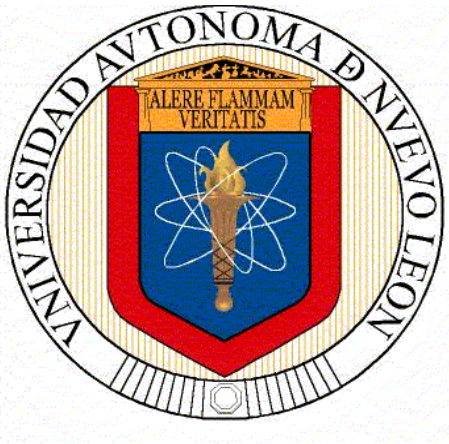

E-RATIONAL VOTERS: MEASURING THE EFFECTS OF INTERNET AND MEDIA FREEDOM ON THE POLITICAL BUDGET CYCLE IN A WEAK DEMOCRACY

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HANS YOEL MARTÍNEZ TORRES

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Hans Yoel Martínez Torres

Aprobación de Tesis:

Asesor de la Tesis **DR. CESÁREO GÁMEZ GARZA**

DR. DANIEL FLORES CURIEL

DR. PABLO MEJIA REYES

DR. PEDRO ANTONIO VILLEZCA BECERRA
Director de la División de Estudios de Posgrado
De la Facultad de Economía, UANL
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FACULTAD DE ECONOMÍA
DIV. ESTUDIOS DE POSGRADO

e-Rational Voters: Measuring the Effects of Internet and Media Freedom on the Political Budget Cycle in a Weak Democracy.

Hans Yoel Martinez Torres[1]

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ABSTRACT

This paper studies the effects of internet access and media freedom on the electoral outcomes in 31 Mexican states during governor elections between 1999 and 2015, by testing assumptions of the Political Budget Cycle (PBC) theory. Previous studies in Mexico have missed to consider the role of voters. Evidence suggests that: 1) Expansive expenditure growth during the year before elections increases incumbent party's vote share, and 2) On the contrary, an increase in the portion of the population that has access to internet reduces incumbent party's vote share. Both results seem to coexist even after controlling by economic performance and making estimations robust to time and education effects. Furthermore, the expenditure effect seems to decrease as more people have access to internet. Finally, opposite to a previous study, evidence suggests that PBC does pay off in Mexico.

JEL Codes: D720, E320, H720
Key search terms: Political Budget Cycle, Voter Rationality, Political Economy of Internet, Democracy, Media Freedom, Media Persuasion

Advisor: Cesáreo Gámez

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[1] Facultad de Economía, Universidad Autónoma de Nuevo León. E-mail: hans.martinezt@uanl.mx; hans.yoel.martinez@gmail.com. I thank the helpful comments and observations from Dr. Daniel Flores and Dr. Pablo Mejía, and from the attendees of the COLMEME seminar, where preliminary results of this study were exposed on October 3rd, 2016, at Universidad Autónoma de México (UAM), in Mexico City. All errors are my own.

« Soutenons la liberté de la presse, c'est la base de toutes les autres libertés, c'est par là qu'on s'éclaire mutuellement. Chaque citoyen peut parler par écrit à la nation, et chaque lecteur examine à loisir, et sans passion, ce que ce compatriote lui dit par la voie de la presse. »

Voltaire, *Questions sur les miracles*

"No había vergüenza ni negación: Televisa y el Partido eran uno solo."

Fabrizio Mejía Madrid, *Nación TV*

1. INTRODUCTION

It may be argued that democracy and political institutions determine, or influence, a nation's economic success or failure (Barro, 1996; Przeworski et al., 1999; Acemoglu & Robison, 2006 & 2012). In established democracies, elections are commonly thought to provide political accountability. They incentivize political competition, and thus, governments to be more efficient by weeping out incompetent politicians (Barro, 1973; Ferejohn, 1986) and by giving governors motives to strive to rule proficiently (Rogoff, 1990). However, electoral pressures may also generate incentives for incumbents to manipulate public policy, seeking to increase their chances of reelection (Nordhaus, 1975), especially in consolidating democracies (Brender & Drazen, 2005). These opportunistic manipulations before elections tend to eventually have negative economic impacts in the short and long term. Political business cycle theory studies these economic distortions stimulated by the recurrence of elections.

In order to provide accountability effectively during elections, citizens need political institutions, *accountability agencies*, to help them monitor politicians (Przeworski et al., 1999). It may be argued that a free media is an effective accountability agency that help citizens in this endeavor (Brunetti & Weder, 2003). With the arrival of internet and social media, and their apparent relation to the recent democratization of certain countries around the world, the interest of their political and economic effects, especially in weak democracies, has been recently increasing. This is the central question of this study.

This paper analyses the effect of internet access and media freedom on electoral outcomes in governor elections of the 31 Mexican states during 1999 to 2015, testing some assumptions of the Political Budget Cycle (PBC) theory, and taking insights from other related trends of literature, such as the Political Economy of Mass Media, the Economic Voting and the Political Science. I argue that in consolidating democracies (characterized

by weak institutions, limited fiscal transparency and/or weak system of checks and balances) with restricted media freedom (e.g. government-captured media, or high industry concentration), internet provides voters access to plural media information.

In accordance with some conclusions from the PBC theory, better informed voters behave like *fiscal conservatives*, punishing incumbents rather than rewarding them, if they incur in opportunistic activities (Peltzman, 1992; Shi and Svensson, 2006; Akhmedov & Zhuravskaya, 2004; Vergne, 2009; in Ademmer & Dreher, 2015). In other words, the ability of voters to monitor incumbents and punish opportunistic behavior depends on their access to free and plural media (Eslava, 2011). The absence of media pluralism, or the presence of biased or captured-by-government media, account for voters to infer poorly incumbent's competence and reward them for incurring in policy manipulation, and increasing their chances to be reelected (Besley & Prat, 2006). Alternatively, the Political Economy of Media would suggest that internet media increases the incumbent's negative signals. Therefore, the more people exposed to internet, the less the votes for the party in power (Miner, 2015).

Evidence suggests, on one hand, that expansive expenditure increases incumbent's party vote share, increasing probability of reelection, even in the presence of traditional broadcast media capture. On the other hand, internet access reduces in average incumbent party's vote share and chances for reelection. Whether if plural media allows voters to identify better incumbent's competence and penalize opportunistic behavior is not clear as results prevail even after controlling by economic performance. So, it seems that pluralism's incremental provision of incumbent's negative signals could be persuading electorate to opposition.

Finally, opposite to previous studies for Mexico (Ramirez & Erquizio, 2012; Amarillas & Gámez, 2014), evidence indicates that the previous year to elections –not the election year– is critical for incumbents and that opportunistic spending does help the party in power to get reelected.

In Section 1.2, I explain briefly how the political economy of internet awaked my curiosity. Section 1.3 argues that Mexico is a good laboratory for testing the effects of internet in a consolidating democracy with media capture. Political Budget Cycle theory, and main conclusions from Political Economy of Mass Media and Economic Voting used

to enhance this study are reviewed in Section 2. Econometric model and data are discussed in Section 3 and 4. I examine results and their limitations in Section 5. Finally, Section 6 explores the main conclusions and some implications.

1.2. TWO SPRINGS, ONE PHENOMENE

Can internet help democratize a country? What role does media freedom play? Is it trivial the reason why media on the net is freer than traditional media? Several international and regional events point the relevance of the web and social networks in democratic processes. For example, we can list and consider at least three: The Arab Spring, Mexico's #YoSoy132 student movement and Mexico's 2015 state elections.

First, during the Arab Spring that started in 2010, social networks were used to coordinate civil mass mobilizations against repressive dictatorships. Access to internet and social media were banned along with mobile phones in Egypt and Tunisia by governments to hinder civic coordination. According to a poll from March 2011[2], almost all Egyptians and Tunisians (9 out of 10) used Facebook to coordinate and promote civil protests. The majority informed themselves by consulting social media sites (88% of Egyptians and 94% of Tunisians) and over a quart (28% and 29%, respectively) considered that blocking Facebook greatly impeded their coordinated actions[3]. During those days, after internet was banned, Google and Twitter developed a special service that enabled Egyptians to make their voices be heard world-wide[4]. It is still being discussed if social media was the main catalyst for this democratic awakening, but it is generally agreed that it was of paramount importance.

Second, during Mexico's 2012 presidential elections, a student movement known as #YoSoy132 denounced mass media manipulation by the state and a biased coverage in favor of the presidential candidate of the *Partido Revolucionario Institucional* (PRI)[5]. This movement was originated after a video response to contradict broadcast and printed media

[2] See DSGGIP (2014). Arab Social Media Report. *Dubai School of Government's Governance and Innovation Program*. Retrieved from: www.arabsocialmediareport.com

[3] Huang, C. (2011, June 6). Facebook and Twitter key to Arab Spring uprisings: report. *The National*. Retrieved from: www.thenational.ae

[4] Egyptians could call a free number by regular phone. The message was translated into text and published in twitter with the hashtag #egypt. See: Arthur, C. (2011, February 1). Google and Twitter launch service enabling Egyptians to tweet by phone. *The Guardian*. Retrieved from: www.theguardian.com

[5] The PRI was opposition party at that moment, but it ruled Mexico for more than 70 years in the past century.

went viral in social networks. Some considered this movement as the beginning of the Mexican Spring[6].

Finally, during 2015 elections, for the very first time in Mexico's political & democratic history, independent candidates for state governors, mayors and congressmen[7] were voted for and resulted elected. Their primary strategy for their campaign, and to convince people to vote for them, was the leverage of social media. Despite all the disadvantages (e.g. onerous law requirements, funding, and TV/radio spots), six candidates resulted elected. The most notorious win was for Jaime Rodriguez Calderon, better known as 'El Bronco' (the wild stallion), who became state governor of Nuevo León, an important industrial hub and second richest state in the north of Mexico.

This study explores and attempts to measure the effects of internet in the events described for the case of Mexico, but we could proceed from here to generalize and understand similar phenomena, as similar events have taken place all over the globe in the last decade.

1.3 MEXICO'S DEMOCRACY, MEDIA FREEDOM AND INTERNET ACCESS

Democratic conditions, state internet access heterogeneity and restricted media freedom make Mexico a good natural laboratory to explore our question of interest. On one hand, in the presence of high industry concentrations, media are more likely to be captured by government (Besley & Pratt, 2006). Furthermore, media has been found to have large persuasion effects in consolidating democracies (DellaVigna and Kaplan, 2007; Enikolopov et al., 2011; Adena et al., 2015). On the other hand, internet prevails freer than traditional media (Miner, 2015). These factors and the high diversity of internet access between the states facilitates the study.

Although democratic progress has been achieved, Mexico is described as a flawed[8], relatively young[9] and partially free[10] democracy. According to some international organizations, such as Freedom House, Reporters without Borders and Article 19, the overshadow of the legislative and judiciary powers by the presidential power, the lack of a

[6] Kilkenny, A. (2012, May 29). Student Movement Dubbed the 'Mexican Spring', *The Nation.* Retrieved from: www.thenation.com
[7] CH (2015, July 15). Mexico's new political reality: The rise of the independents. *Canning House*. Retrieved from: www.canninghouse.org
[8] See Economist Intelligence Unit: www.eiu.com
[9] CSP (2010). Polity IV Country Report 2010: Mexico. Center for Systemic Peace. Retrieved from: www.systemicpeace.org
[10] See Freedom House: www.freedomhouse.org

fully regulated system of political competition, the politically motivated violence that plagues the country, a weak rule of law and the corruption are the main challenges still to overcome by the country.

Nevertheless, Mexico has experienced, like other countries around the world, a slow but constant growth in internet household penetration and internet users (see Fig. 1). However, in 2011 Mexico was still behind compared to other OECD countries (see Fig. 2). Furthermore, access to the web has not spread through the country equally for all. A high diversity persists between the states (see Fig. 3 and Fig. 4). For example, Mexico City, Nuevo Leon, and Baja California Sur have much higher penetration rates than Chiapas, Oaxaca and Tabasco (see Fig. 5).

Moreover, it is not only important for countries to have access to internet, but also a strong media freedom. The sole access to internet is irrelevant if people can't be well informed by media that is objective and enjoys freedom to exercise its watchdog function. In Mexico, violence against independent media, journalists' assassinations[11], government censorship, and high concentration levels of broadcast media industry compromise freedom of journalism[12]. Nonetheless, internet has enjoyed more liberty than traditional media. Freedom House (FH)[13], an international independent watchdog organization, ranked Mexico's freedom of the press as *not free* in 2015 (see Fig. 1-5). On the contrary, Mexico's net freedom was classified as *partially free* by the same organization.

Furthermore, a major threat to the broadcast media freedom is the elevated industry concentration rate. The principal source of information for most of the country is the oligopolistic broadcast media. The two major TV networks, Televisa and TV Azteca, control almost all the television market. Also, the concentration of official advertising is elevated. Freedom House[14] reported that they both together get 25 percent of the total sum of federal resources allocated for official advertising, estimated at about $400 million dollars. This discriminatory use of public advertising funds is considered a "subtle/soft censorship" by international organizations[15].

[11] Freedom House 2016 report describes Mexico as one of the world's most dangerous places for journalists and media workers. See Freedom House: www.freedomhouse.org. Article 19 reports 11 assassinated journalists by decemeber 11, 2016. See Article 19: www.article19.org

[12] See Reporters Without Borders (RSF): www.rsf.org

[13] See Freedom House: www.freedomhouse.org

[14] Ibid.

[15] See Article 19 (2014, March 27). Mexico: "Soft" censorship poses significant dangers to press freedom. *Aricle 19*. Retrieved from: www.article19.org

Consequently, these three factors —weak democracy, high internet heterogeneity and traditional broadcast media capture— are an important background for our study and at the same time qualify Mexico as a good laboratory for testing our hypothesis.

2. THE POLITICAL BUDGET CYCLE, ECONOMIC VOTING AND ECONOMICS OF MASS MEDIA

Although this study focuses on the Political Budget Cycle and Political Economy of Internet, it is also related to other literature in Economics and Political Science, such as Political Economy of Mass Media, Economic Voting, Public Choice, and Political Accountability.

2.1. THE POLITICAL BUSINESS CYCLE

The Political Business Cycle theory studies the economic distortions stimulated by the recurrence of elections. Under this theory, incumbent governors have incentives to remain in power. They engage in manipulation of public policies to persuade voters to keep them in power (Nordhaus, 1975), even at the cost of a downturn in the long term.

There is currently a debate on how to explain from an economic perspective the incentives and rationality of the voters. Traditional models assume that short-sighted and naive voters have adaptive expectations, which are independent of incumbent's ideology (Nordhaus, 1975). In these models, voters do not learn from the past; they have forgotten the previous post-electoral recession by the time the following election approaches. These assumptions –naïve voters who are incapable of learning and predisposed to regular mistakes in expectations– are considerably unconvincing (Alesina, 1997).

On the contrary, rational models assume rational expectations, supposing asymmetric information about the incumbent's performance between voters and politicians (Rogoff and Sibert, 1988; Rogoff, 1990; Persson and Tabellini, 1990). In these models, politicians are better informed about their own competence than citizens. Voters are assumed to infer incumbent's competence by economic performance. Incumbents take advantage of this asymmetry of information and try to signal as much capability as possible by manipulating public policies, and, thus, leading to economic cycles. True competence of politicians is

revealed to voters only after elections. Intuitively, if incumbent's competence could be observed by voters, no political cycle would be produced.

However, in this signaling game, the most competent incumbents generate implicitly the sharpest business cycles in the separating equilibrium, and only they are reelected. In other words, the price for selecting the most competent politicians is the rational opportunistic cycle. These models are difficult to test because of the unobservable candidates that don't get reelected. Other group of studies (Persson and Tabellini, 2000; Shi & Svensson, 2002; Mink and de Haan, 2006) argue in favor of a moral hazard model in which not even the incumbents know their own competence. The incumbent's capability is revealed to everyone only after elections, including incumbents themselves. Particularly, politicians are *ex ante* not certain about their own ability to handle difficulties in the future. Consequently, all kinds of incumbents, and not only the most competent, generate cycles. This assumption allows their study.

Another interesting result from rational opportunistic models is the *rational retrospective* voter behavior. Contrary to the naive voters of the traditional models, rational retrospective voters judge incumbent based on past economic performance. Furthermore, a rational voter can distinguish exogenous economic shocks from incumbent's competence quite efficiently, while a naïve voter will simply punish an unfortunate incumbent (Alesina, 1997).

2.1.1. POLITICAL BUDGET CYCLE

Originally, the Political Business Cycle theory studied the effect of elections on the real economy (GDP growth rates, unemployment), but works have recently shifted toward policy makers' instruments, such as fiscal policies (e.g. government expenditure and taxes). Drazen (2001) argues that there are at least two good reasons to focus on fiscal policy manipulation, rather than real economy effects: first, the lack of empirical evidence of effects on real economy, and second, the government's limited direct control over real variables. Although aggregate macro variables, such as unemployment, growth, inflation, and the deficit, are relatively easily observed by voters, the composition of spending may be a subtler and more powerful way for incumbents to frame electoral cycles. Particularly, shifting spending to more visible programs that may favor key constituencies is a much

easier policy to implement than reducing aggregate unemployment in an election year (Alesina, 1997). Moreover, in developing countries public spending has a significant effect on voter's welfare. Consequently, studies have focused on what literature identifies as the Political Budget Cycles (PBC).

Former studies suggest that the existence of Political Budget Cycles is a phenomenon of young democracies. Contrary to developed countries, manipulation of fiscal policy would work effectively in developing countries because their inexperience with electoral politics and the lack of plural information. As the nation becomes experienced in electoral politics, cycles would be eradicated (Brender & Drazen, 2005). Nevertheless, recent studies find evidence of budget cycles also in established democracies (Eslava, 2011; De Haan and Klomp, 2013; Ademmer & Dreher, 2015).

2.1.2. PBC, SOPHISTICATED VOTERS, MEDIA AND MEDIA FREEDOM

Discussion is now turning towards identifying and analyzing specific conditions that induce political budget cycles to prevail. Some factors that have been explored in empirical studies are: the level of development (Shi & Svensson, 2006), level of democracy (Gonzalez, 2002; Brender & Drazen, 2005), fiscal transparency and fiscal rules (Rose, 2006; Alt & Lassen, 2006; Alt & Rose, 2009; Debrun et al., 2008; Stanova, 2012), electoral rules (Persson & Tabellini, 2003), presence of checks-and-balances systems (Streb et al., 2009), sophisticated (experienced and informed) voters (Shi and Svensson, 2006), and media freedom (Akhmedov & Zhuravskaya, 2004; Vergne, 2009; Ademmer & Dreher, 2015)

Particularly, the group of studies that analyze sophisticated voters, media and media freedom find evidence of a negative relation between informed voters and media freedom with the amplitude of the cycles, regardless of the level of the country's development (for developed countries see: Shi and Svensson, 2006; Ademmer & Dreher, 2015; for developing countries see: Akhmedov & Zhuravskaya, 2004; Vergne, 2009).

Vergne (2009), for instance, investigates the electoral composition changes in public spending, analyzing forty-two developing countries (Mexico included), with data from 1975 to 2001. He finds that public spending during election year adjusts toward more observable expenditures, such as transfers and subsidies, and away from less notable

expenditures such as capital investments. He concludes that a great share of informed voters leads to smaller alterations in the distribution of public spending during electoral years.

For developed countries, Ademmer & Dreher (2015) study this phenomenon in twenty-five countries of the European Union, using data from 1996 to 2012. He shows that European governments commonly incur in political budget cycles. For him, the interaction of fiscal institutions and media strength explain the amplitude of the cycles. Specifically, he argues that fiscal rules only help to reduce political budget cycles in weak media countries, whereas they fail to do so where the press is strong. He suggests that a strong media generates a high political pressure for governments to be corrupt, while contries with week media favor the possibility of malfeasance. He concludes that a strong press is key to eradicate political budget cycles: "*Whether incumbents will be detected and punished by electorate when engaging in political budget cycles requires a media that is free to report on government abuses without fearing legal or political punishment and that has the human and economic resources to conduct journalistic investigations and can reach and inform voters."* (Ademmer & Dreher, 2015).

This conclusion agrees with the literature survey from Eslava (2011), where she finds scarce evidence supporting the assumption that voters normally reward high-deficit governments, but rather that voters are fiscal conservatives. Namely, voters punish opportunistic behavior (Peltzman, 1992; Besley and Case, 1995; Alesina et al., 1998; Brender, 2003). Nonetheless, these voters depend on whether they can effectively monitor government behavior.

However, the discussion has not been settled. Some other studies focus precisely on whether voter demeanor, compared to those who try to measure the determinants of the amplitude of the cycle. Do they reward or penalize opportunistic behavior? For a group os studies (Akhmedov and Zhuravskaya, 2004; Drazen & Eslava, 2010; Aidt et al., 2011; and Balaguer et al., 2015) voters reward opportunistic fiscal manipulation. Nevertheless, evidence for voters behaving as fiscal conservatives has been found in Latin America (Kraemer, 1997), Israel (Brender, 2003), Colombia (Eslava, 2005), Argentina (Jones et al., 2012), Brazil (Litschig and Morrison, 2012) and for countries with high and low levels of democracy (Mourão and Veiga, 2010).

In the case of Mexico, evidence of political budget cycle has been found at the federal level (Gonzalez, 2002; Flores, 2007) and state level (Gámez, 2009; Ramirez and Erquizio, 2012; Amarillas and Gámez, 2014). State level studies find evidence that suggests an expansion in state expenditures during electoral years. However, Amarillas & Gámez (2014) conclude that this opportunistic behavior does not increase incumbents' probability to be reelected.

I argue that in consolidating democracies like Mexico, where traditional media is highly probable to be captured, internet facilitates access to plural information. Therefore, the less the access to internet, the more easily the voters could be fooled by opportunistic fiscal manipulations. In other words, in the absence of free and plural media, voters will act naively, confusing opportunistic behavior and rewarding incumbents. Expected result is that an increase in government spending before elections will increase the incumbent party's vote share, and their chances for reelection.

2.2. ECONOMICS OF MASS MEDIA

This study also contributes to the literature of Economics of Mass Media[16], which is a relatively new flourishing field of research. In this area, there is a considerable number of empirical studies that investigate the political persuasion of mass media (DellaVigna and Kaplan, 2007; Genzkow et al., 2011; Enikolopov et al., 2011; Durante and Knight, 2012; Adena et al., 2015; Miner, 2015); the role of mass media in shaping political and economic outcomes (Besley & Burgess, 2002; Gentzkow et al., 2004; Freille et al., 2007; Snyder & Strömberg, 2010); and specifically, the political economy of the internet (Gentzkow and Shapiro, 2011; Enikolopov et al., 2012; Campante et al., 2013). There are also theoretical studies proposing models for media bias and their implications (Gentzkow and Shapiro, 2005; Besley and Pratt, 2006).

Among the theoretical studies, Besley and Pratt (2006) develop a model for political accountability and mass media. Media can be captured endogenously by government. Government can, therefore, influence political outcomes. In this model, voters decide, based on available information, whether to reelect or not incumbent party. Information is endogenous; the media industry provides it to the electorate. One of the main implications

[16] For a complete review of literature on Media and Politics see Strömberg (2015).

of the model is that changes in market concentration affect voters' welfare. Furthermore, media pluralism restricts effectively their capture by government. Intuitively, the larger the quantity of independent media, the less probable for government to control news supply.

Regarding the empirical studies, one of the main conclusions is, firstly, that media possess a significant power of political persuasion in countries with weak democratic institutions (Enikolopov et al., 2011). Secondly, the effects on voting are significantly high in environments where an independent news provider enters a market where media is controlled by the government (Strömberg, 2015).

Particularly for internet, Miner (2015) studies its effect on the elections results of 2008 in Malaysia. He first develops a theoretical model, elaborating from Besley and Prat (2006), for understanding the influence of internet on electoral outcomes in a setting where all media are controlled by government[17]. Additionally, the author accounts for differences between traditional media (TV, radio, newspapers) and internet media. He argues that internet differs from traditional media sources in that it is too expensive to be captured[18]. The main empirical prediction of Miner's (2015) model is that an increase in internet access will diminish in the incumbent party's vote share, even in the presence of a state-controlled traditional media. Intuitively, internet media allows voters to perceive better the negative signals of incumbent's competence, neutralizing media controls. The incumbent party's chances for reelection will decrease as more voters obtain access to negative signals. Evidence found by this study suggests that internet growth explains almost half the total swing in percentage points against incumbent in the Malaysian state elections of 2008. Author concludes that internet facilitates democratization by preventing monopolization of information.

Studies for Mexico, mainly from Political Science, investigate the political effects of mass media (Stanig, 2014; Larreguy et al., 2016), agenda setting and media bias in TV and newspapers (Flores & McComb, 2010; Martínez et al., 2015; Corral, 2016), and media effects on voting behavior (Lawson & McCann, 2005; Greene, 2011; Camp, 2013; Larreguy et al., 2014; Díaz & Moreno, 2015). Evidence suggest the existence of media bias (Lawson & McCann, 2005; Martínez et al., 2015), and strong political persuasion on voters

[17] In Malaysia, all media, except for the internet, is captured by state (Mine, 2015).
[18] Author argues that: first, internet is expensive to regulate because of its diffuse nature and second, from an economic view, web censorship by government will surely disincentive the Foreign Direct Investment (FDI).

(Lawson & McCann, 2005; Larreguy et al., 2014), specially by television (Lawson & McCann, 2005; Greene, 2011; Camp, 2013). Moreover, television bias during presidential elections has alternated between the ruling party (towards the PAN in 2006; see Greene, 2011) and the opposition (towards the PAN in 2000, and towards the PRI in 2012; see Lawson & McCann, 2005; and Camp, 2013).

Social media and #YoSoy132 student movement effects on voting during 2012 elections have also been investigated by Camp (2013) and Díaz & Moreno (2015). These studies suggest that: television was slanted towards the PRI (main opposing party at that time), social media users and #YoSoy132 supporters were more likely to vote for PRD (left-wing party) and social media users were more educated, of higher income and more interested in politics.

I argue that in Mexico, contrary to internet media, traditional broadcast media is highly probable to be biased due to the elevated industry concentration. Therefore, internet enables Mexican voters to perceive negative signals of incumbent's quality, even in the presence of biased traditional media. Following Miner (2015), the expectation is that an increase in internet access decreases the incumbent party's vote share.

2.3. ECONOMIC VOTING

This study also is related to the literature of Economic Voting. This strand of studies follows the *responsibility hypothesis*, in which the voters hold the government responsible for the economic performance (Lewis-Beck and Paldam, 2000; Paldam, 2004). Studies that investigate the determinants of incumbent reelection consider mainly the following factors:

a) Unemployment: Some studies find evidence for voter penalization of unemployment increments at central level (Veiga and Veiga, 2004; Cerda and Vergara, 2008; Mourão and Veiga, 2010) and at local level (Martinussen, 2004); other studies find significant correlation between presidential approval and unemployment (Berlemann & Enkelmann, 2014); and some others suggest that effects are not significant (Veiga and Veiga, 2007a; and Aidt et al., 2011).
b) Incumbent's ideology: whether if they have left or right ideology (Veiga and Veiga, 2007b; Aidt et al., 2011).
c) Alignment with central government (Aidt et al., 2011; Cassette and Farvaque, 2014)

d) Past support for the incumbent: electorate party preferences may endure from one election to the next one (Brender, 2003; Veiga and Veiga, 2007a; Drazen and Eslava, 2010; Aidt et al., 2011; Cassette et al., 2013).

Following these studies, and considering the available information, control variables selected for incumbent's performance were unemployment growth and GDP per capita growth. I control also for incumbent's party using dummy variables. The objective is to isolate the effect of good economic outcomes of incumbents and voter's preferences. Even when the focus of this study is not to explain these variables, the expectation would be that voters reward reduction in unemployment, and higher GDP growths. As for the incumbent's party, expectation is not so clear due to the political shifts that Mexico has experienced since 1997, when the PRI lost supremacy of the federal congress.

3. DATA

Most information for the 31 states of Mexico[19] was collected from different databases of INEGI, the Mexican Institute of Statistical Information. Table 1 displays a summary of the variables, their description and source. Descriptive statistics are displayed in table 2. The following rates were obtained from INEGI's ENDUTIH[20] survey (2001-2002, 2004-2015)[21]:

a) Internet Users: fraction of state population that has used internet inside or outside his house in the last twelve months.
b) Household Internet Access: fraction of state households that has access to internet.
c) Education: fraction of state population that has at least a bachelor's degree.
d) PC: fraction of state households that have at least one personal computer (desktop, laptop, tablet or notebook).
e) TV: fraction of state households that have at least one television.
f) Pay TV: fraction of state households that have pay-tv service.

State annual expenditure growth was also obtained from INEGI. Total spending includes electoral spending, that is, the budget given to the political parties. Electoral

[19] We exclude from our analysis the City of Mexico.
[20] Information obtained from this survey is representative at state level starting from year 2010. Results should be interpreted with caution.
[21] For missing state elections data for years 1999 (Baja California Sur, Coahuila, Guerrero, Hidalgo, México, Nayarit and Quintana Roo) and 2000 (Chiapas, Guanajuato, Jalisco, Morelos and Tabasco), 2001 data was used. Similar results are obtained if we remove these observations.

expenditure was deducted from total spending as it does not reflect an opportunistic expense. Any other expenditure that was not originally meant to be used with electoral purposes and helps incumbent parties to increase their vote share could be considered as an opportunistic tool[22]. Therefore, state annual expenditure growth was calculated using the difference of the total annual expenditures minus the electoral spending[23].

State GDP (1999-2006, 2003-2014) and state unemployment rates (1999-2004, 2005-2015) were also obtained from INEGI. GDP per capita[24] was calculated using population data from CONAPO. GDP series were chained to calculate GDP per capita growth for the years of the whole period. On the contrary, the unemployment series were not chained as they could not be comparable due to the changes in measurement that INEGI implemented in 2005. So, 2005 unemployment growth is a missing value. Other missing values due to lack of information are the GDP per capita growth and expenditure growth of 2015.

For electoral results, the state electoral institute of each state (Instituto Estatal Electoral) were consulted, as there does not exist a consolidated information source. In Mexico, the National Electoral Institute (INE) gives autonomy to each state to carry on their own elections. INE is responsible only for presidential elections. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Additionally, dummy variables for each party are used to control for electorate party preferences. PRI dummy variable is equal to 1 if the incumbent party during state elections is the PRI, and 0 otherwise. Similarly, PRD dummy variable is equal to 1 if the incumbent party during state elections is the PRD, and 0 otherwise. PAN is the reference party. I also control with a dummy variable for extraordinary elections which is equal to 1 if the election is extraordinary, and 0 otherwise.

4. ECONOMETRIC MODEL

Previous studies frequently use mainly two methods for their estimations: 1) OLS, taking incumbent's vote share as the dependent variable and 2) probit/logit models, using a reelected/no reelected dummy variable as the dependent variable. Unfortunately, OLS do

[22] Previous studies for Mexico at state level have not taken this into account in their estimations. Consequently, it may be that their results are just identifying the increase in electoral spending, rather than a political budget cycle. Anyways, the difference is not substantial. In average electoral budget represents 0.4% of total spending the year before the elections and 0.7% the year of elections.
[23] All quantities were measured in thousands of constant 2011 Mexican pesos, from1999 to 2014, for each state.
[24] GDP was adjusted for inflation using the same 2011-peso base as the state expenditures.

not provide good estimators when the explained variable is bounden between zero and one because the effects of any explicative variable cannot be constant through the entire range (unless the range of the independent variable is very limited or zero). Furthermore, the predicted values are not certain to fall in the interval [0,1]. According to Papke & Wooldridge (1996), the problem is analogous to binary data. Although OLS provides a good guide to identify significantly statistical variables, and it can be used as an exploratory analysis, it is preferable to use other methods (Cameron & Trivedi, 2005).

Papke & Wooldridge (2008) and Wooldridge (2010) propose what they call the *fractional probit model* for panel data. These models have been widely used to analyze all kind of ratios and proportions in economic literature. Nevertheless, only a few, to the best of my knowledge, have studied vote shares (see Gardeazabal, 2010; Gonçalves, 2013; Mason et al., 2013; and Iyer & Shrivastava, 2015). In comparison to the logit/probit model, the fractional probit provides more insight to the analysis, especially when there are few observations, as there is more variance between the different vote shares compared to the re-elected/no re-elected dummy variable.

The fractional probit model has the form:

$$E(y_{it}|\boldsymbol{x}_{it,}c_i) = \Phi(\boldsymbol{x}_{it}\boldsymbol{\beta} + c_i) \quad (1)$$

where "i" refers to the state, "t" to the year of elections. The dependent variable, y_{it}, $0 \leq y_{it} \leq 1$, stands for popularity of incumbent, measured as the incumbent party's vote share. $\Phi(\cdot)$ is the standard normal cumulative distribution function. Explaining variables, $\boldsymbol{x}_{it}$, in this first model include proxies for information asymmetry or rationality of voters, state expenditure growth variables and control variables for the economy's performance. c_i is the state unobserved effect and its distribution is assumed to be: $c_i|\boldsymbol{x}_{it} \sim Normal\ (\psi + \overline{\boldsymbol{x}}_i\boldsymbol{\xi}, \sigma_a^2)$, where $\overline{\boldsymbol{x}}_i \equiv T^{-1}\sum_{t=1}^{T}\boldsymbol{x}_{it}$.

Under certain assumptions[25] equation (1) can be rewritten as follows:

$$E(y_{it}|\boldsymbol{x}_{it,}a_i) = \Phi[(\psi + \boldsymbol{x}_{it}\boldsymbol{\beta} + \overline{\boldsymbol{x}}_i\boldsymbol{\xi})/(1+\sigma_a^2)^{1/2}] \quad (2)$$

[25] For a full description of the model see Papke & Wooldridge (2008).

The pooled Bernoulli quasi-MLE (QMLE) estimator, which is consistent and, under no serial correlation, efficient is used for estimations. QMLE estimator is obtained by maximizing the pooled probit log-likelihood. Because we have unbalanced data, I also allow for different intercepts for each different quantity of observations per state, following Wooldridge (2010 & 2013). Data includes two elections for 10 states (23% of all observations), three for nineteen (67%) and four elections for just two states (10%). So, we allow for three intercepts.

Among explaining variables, information variables used in estimations are: internet users, household internet access, household PC access, household TV access, and household pay-Tv access and education as described in section 3. Because almost all of them are highly correlated (except for TV), we use one variable per estimation to avoid multicollinearity. Correlations are shown in table 3. As stated at the end of section 2.2, the expectation is that an increase in access to internet media would decrease the incumbent party's vote share. Therefore, internet users, household internet and PC variables are expected to be significant and of negative sign. Expectation for education is similar because social media users have been characterized as more schooled. Voters could also have access to plural information through pay-tv, as it may offer news from media outside the possible control of government. So, a negative sign is also expected, while for its significance, it is not clear, as its impact could be limited. Regarding TV, a positive sign is expected, following a similar logic —government-captured media and more voters exposed to it— but it could turn out not significant because of the low variance.

To test the Political Budget Cycle assumption that an opportunistic manipulation of fiscal policies before elections helps incumbent's party get reelected, state expenditure growth is used as an explaining variable. Spending growth is calculated as described in previous section. Growths for both, the year before elections and the year of elections, are computed because it is uncertain where opportunism could be better captured, as state elections are held mostly mid-year and data available is aggregated annually. So, state expenditure growth is expected to have a positive sign and be statistically different from zero.

For control variables, economic performance variables used in estimations are state GDP per capita growth and state unemployment growth. The objective is to isolate the

effect of external economic shocks that could affect voter's decisions, or hopefully, the good from the bad incumbents. In accordance to the hypothesis of rational retrospective voting, the sophisticated electorate could discern between luck and incumbent's competence. Other control variables used are party dummy variables, to control for voter's preferences; a dummy variable for extraordinary elections, and time[26].

Now, it may be argued that probably internet variables will capture a democratic tendency in the country that could be explained by other factors such as the strengthening of the transparency institutions, the maturity of the electoral process, increased experience of voters, or others. It also may be argued that internet variables could somehow capture the effects of education because internet users usually have more years of schooling. Nevertheless, these two variables, time and education, are highly correlated with internet variables.

Therefore, the following procedure, inspired in the Hausman test for endogeneity (Wooldridge, 2002), is used to isolate these effects. First, the following auxiliary equations are estimated by ordinary least squares (OLS) with state fixed effects:

$$internet\ users_{it} = \beta_0 + \beta_1 education_{it} + \beta_2 time_t + f_i + \varepsilon_{it} \quad (4)$$

$$internet\ users_{it} = \beta_0 + \beta_1 education_{it} + \beta_2 time_t + \beta_3 time_t^2 + f_i + \gamma_{it} \quad (5)$$

$$internet\ users_{it} = \beta_0 + \beta_1 education_{it} + \beta_2 time_t + \beta_3 time_t^2 + \beta_4 time_t^3 + f_i + \omega_{it} \quad (6)$$

where the variables *internet users*, *education* and *time* are the same as defined previously. State fixed effects[27] are indicated as f_i. Squared and cubic time variables are included in equations (5) and (6) respectively to identify quadratic or cubic tendencies. The expectation is that internet growth displays exponential growth, but as it increases past certain point it should diminish.

Second, estimated error residuals ($\hat{\varepsilon}_{it}, \hat{\gamma}_{it}, \hat{\omega}_{it}$) of auxiliary regressions are inputted in similar models as equation (2). Intuitively, the residuals are everything else that explains internet users' growth that is not explained by time and education. The correlation between the estimated residuals, and time and education is very low by construction. Therefore, time and education are now possible to be included in estimations avoiding multicollinearity by replacing the internet variable by $\hat{\varepsilon}_{it}, \hat{\gamma}_{it}$, and $\hat{\omega}_{it}$. If estimated residuals in second model

[26] *Time* is ordinary time, starting at 1 for the first election of every state and increasing one unit per election.
[27] Hausman test favored fixed effects over random effects.

are significant, we could interpret as the isolated effect of internet informed users from other democratic tendency factors (time) and education.

5. RESULTS

First, I test the Political Budget Cycle assumption. Table 4 displays the average partial effects of annual expenditure growth on incumbent party's vote share varying control variables. Annual expenditure growth of the year before elections is significant and with the expected sign for all estimations. Based on results, we could say that incumbent party's vote share increases as the state expenditure growth increases with a rate such that, if the rate were constant[28], the vote share would increase between 2.3 and 3.3 percentage points, if expenditure growth increased by 10 percentage points. Contrary to what Amarillas and Gámez (2014) conclude, this result suggests that opportunism does pay off. Engaging in political budget cycle maneuvers to increase total expenditure the year before elections increases incumbent party's chances to be reelected.

It's worth mentioning that during an exploratory analysis the expenditure growth during election year turned out not to be statistically significant. Some explanations could be ventured from two different viewpoints: one from a purely data standpoint and another from a more theoretical one. On one side, aggregated data represents a challenge per se. Generally, most state elections are held mid-year on the election year, but there are some elections that were held during the first quarter of the election year, and, unfortunately, only available data at state level is annually aggregated. Therefore, it could be that pre-election year spending captures better the opportunistic behavior because a significant amount could be spent during the previous year to elections, or that it could drop drastically after election day preventing election year to capture the effect (see Fig. 8). Expenditure growth for the year before elections is in average almost as double as the year of elections, if we deduct electoral spending (see Table 2). Previous studies for Mexico have focus on spending during election year, and although some have included pre-election year as a control variable, the results are not conclusive. For example, contrary to Ramirez & Erquizio (2012), Gámez (2009) finds evidence of opportunism in pre-election year at state level but

[28] See StataCorp. (2011) for details on interpretation.

only for Subsidies and Other Expenses and not for Total Expenses[29]. Evidence found in this study would suggest to redirect analysis towards the year before elections. Furthermore, opposite to Akhmedov & Zhuravskaya (2004), which argues that PBC are short lived right before elections, this study's result would imply that opportunism is anticipated with at least one year before elections, if it's the case that incumbents knew it and further evidence of opportunism during pre-election year is found.

On the other hand, from a theoretical point of view, the electorate could evaluate incumbents based on the year before elections on purpose. They could be aware that during an election year the ruling party could behave opportunistically. This could make sense considering the rational retrospective behavior of voters (Alesina, 1997) and the fiscal conservative theory (Peltzman, 1992). Particularly, in similitude to retrospective voting – which states that voter's expectation of future incumbent competence is based on observation of current economic performance and that sophisticated voters could disentangle external shocks from opportunism–, this study's results would imply that voters could consider economic performance of the previous year to elections, disregarding observations of the election year, to make their decision. Nevertheless, considering the economic performance control variables' results, it is not clear if voters could act as sophisticated voters. Notably, GDP per capita growth turned out not significant, but unemployment growth, which is highly significant, resulted with a sign contrary to expectation[30]. Now, in comparison with the fiscal conservative theory, voters could probably identify opportunistic behavior during election year, but instead of punishing it, they could tolerate it, if previous economic performance was not so bad. So, they could observe the year before elections, instead of the election year, as a way of reducing noise to make their choice. Anyways, the limitation seems to persist, as their discernment of economic performance and incumbent's opportunism is not clear. I return to this point later when reviewing the internet media results. In summary, evidence so far would imply from a theoretical viewpoint that voters could prefer to evaluate incumbent based on the previous year to elections, instead of the election year, to reduce noise, with some caveats regarding their ability to disentangle fiscal manipulation and economic performance.

[29] Both studies miss to exclude electoral spending from their estimations.
[30] Even when the focus of this study is not control variables, some possible explanations are ventured later in this section.

We can turn now to the internet media results. Table 5 displays estimations of running each of the internet media variables separately including only intercepts for unbalanced data and extraordinary elections. Internet users, household internet access and PC result significant and of negative sign. Education, TV and Pay-TV[31] are not significant. Notably, the variables more related to internet turn out significant. Therefore, as expected, evidence would suggest that access to freer and plural media provided by internet seem to reduce incumbent party's vote share, decreasing the probability of reelection. We could interpret that incumbent party's vote share decreases as the access to internet increases with a rate such that, if the rate were constant[32], the vote share would decrease by 1.6 percentage points if expenditure growth increased by 10 percentage points. For instance, in Nuevo León, internet users grew 45 percentage points by 2015 since last elections. This implies a reduction of approximately 7.2 percentage points for incumbent's vote share due to internet users, supposing a constant effect.

Evidence strengthens for internet related variables as we add expenditure growth and control variables (see tables 6 to 11). TV and Pay-TV remain not relevant. However, some evidence in favor of education is found when controlling by economic factors. Also, coefficient is greater than internet variables. Therefore, it is not clear if the effect is due to information access or voter's sophistication. I return to this point later.

Retaking the discussion about the expenditure growth in the light of this second set of regressions, it is notable that it remains significant and of similar magnitude for all estimations. Opposing signs of internet and expenditure suggest seem to coexist, and they prevail even if we control or not by economic performance. These results apparently favor the Political Economy of Media hypothesis over the Rational Model of the Political Budget Cycle. That is, no matter the performance of the economy, the greater the fraction of voters with access to internet, the greater the shrink of the incumbent party's votes. It seems that voters are not better assessing the incumbent's competence, but rather just gaining access to negative signals. We would expect a result a similar result to education (table 9) to confirm rational voter's hypothesis. Once we add economic variables, education becomes

[31] It's worth noting that even when PC and Pay-TV have similar growth rates only PC results statistically significant different from cero. PC is arguably more related to internet media, although it could also be argued that Pay-TV is another source for plural media, as it offers a wide range of news programs. Nevertheless, some market studies (OSF, 2011; IFT, 2015; IMS, 2015) suggest that the main source of news for non-internet users is open TV (especially local TV channels), whereas for internet users is the web. This implies that internet could replace TV as source for information and Pay-TV is not consumed for its news content.

[32] See StataCorp (2011).

significant, suggesting that voters do consider them into their decision. Anyways, this evidence is not robust enough to argue in favor of sophisticated voters.

However, if internet allows voters to better perceive negative signals from incumbents, probably, fiscal manipulation could be less effective in persuading the electorate in the presence of freer and plural media. We could expect that an increase in internet users could reduce the effect of the spending. That's what is found, although the decrease is not substantial. Table 12 displays average partial effects of expenditure growth at different levels of internet users, using same equations as in table 6. Results suggest that the greater the fraction of internet users, the less the persuasion effect of expenditure growth.

Regarding the economic performance control variables[33], unexpected results were obtained. First, pre-electoral year GDP per capita growth is not significant for any estimation. It could be that GDP growth is too abstract for voters to be perceived. Second, and more intriguing, unemployment growth rate of the year before elections resulted significant but with a positive sign. This is counterintuitive, as we would expect for a higher level of unemployment a lower incumbent party's vote share. A possible explanation could be the way of measurement. It should be brought into attention that in 2005, INEGI changed the way of measuring unemployment. It could be that classifications of unemployment and informal workers might be misleading.

We can deal now with the high correlation between time and education with internet variables. Table 13 contains estimations of auxiliary regressions 4, 5 and 6[34]. Education results significant in all cases, whereas for time, even though not all time variables resulted significant, particularly in column three (3), they were very close. In fact, the adjusted squared R increases a little. So, results suggest a cubic tendency in internet growth with time. In other words, an exponential growth that slows down after certain point.

Now, I use estimated residuals from auxiliary regressions instead of internet users, and add time and education as control variables. Table 14 displays the descriptive statistics of estimated residuals. Tables 15 to17 display the results. In all cases, we can observe that the effect of internet users doubles, keeps significant and with the expected sign. As for the

[33] Pre-election year values are used for several reasons: First, the objective to control for economic performance of the same year of the expenditure variable. Second, GDP of election year was significant for some estimations but it was highly correlated to internet variables. Finally, unemployment growth of the election year, although sometimes significant, does not modify results and it would reduce degrees of liberty if included.

[34] Standard statistical test revealed heteroscedasticity and no auto-correlation of first degree. Robust standard errors used in estimations.

time and education variables, they turn out not significantly different from zero, but with the expected sign. Therefore, first estimations might be underestimating the effect of internet due to the correlation with time and education.

Furthermore, the lack of significance in the education variable could suggest that internet is more important for voters to receive negative signals from incumbents than education itself. On one hand, this could make sense because even when voters can get more education and be better prepared to disentangle economic conditions from opportunism, they would not be able to make a good judgement if available information is biased or not free. Moreover, this result agrees with Banerjee et al. (2011), which concludes that even the poorly educated has the capacity to process coarse information in a relatively sophisticated manner. In other words, in a scenario where traditional media is highly probable to be government-captured, plural information provided by free media seems to be more relevant for voter's decisions than education. On the other hand, this result could also be explained by the difference in growth rates of the two variables. Usually, education growth is slower compared to the exponential spread of internet, as suggested by the significance of the quadratic and cubic tendencies found in auxiliary regressions.

Regarding the time effect, or democratic tendency, these results also give a more robust evidence in favor of internet media, as it resulted not significant. We could interpret that there surely exist other factors that might explain the decrease in the vote share of incumbents, such as electoral learning or strengthening of political institutions, nevertheless access to plural information provided by internet prevails as more relevant.

Finally, some results suggest that the PRI received in average between 6 and 7 percentage points more than the PAN, and the PRD between 6 and 7 percentage points less. Although, evidence is not strong.

6. CONCLUSIONS

This study evaluates the effects of internet and media freedom on state election outcomes in Mexico, a consolidating democracy, during 1999-2015. Despite, the democratic progress that has been achieved, Mexico is still characterized by weak institutions and limited freedom of traditional media. Specifically, among other critical problems like violence against journalists, broadcast media is considered not free because

of high level of industry concentration. It is likely that it might be captured and that it might influence election outcomes. Internet, on the contrary, enjoys more freedom and diversity. In general, media possesses a strong political persuasion in consolidating democracies, contrary to more mature ones.

Using the Political Budget Cycle approach, and strengthening it with insights from Economics of Mass Media and Political Science, results suggest on one hand that an increase in internet access decreases the incumbent party's vote share, reducing the probability of their reelection. On the other hand, an increase in the opportunistic spending growth the year before elections increases incumbent party's vote share. These results coexist even when their effects are opposite. Particularly, an increment in internet users seem to reduce the effect of expenditure. Furthermore, contrary to a previous study in Mexico, evidence suggests that opportunism does pay off for incumbents.

In comparison to the rational voter theories, results seem to shed light on voter behavior. On one hand, evidence suggests that the expenditure during the year before elections is relevant for seducing voters, despite the focus on the election year of previous studies for Mexico. Moreover, voters seem to have difficulty to disentangle economic performance from incumbent's opportunism, as results prevail even with no controls for economic factors. The ventured explanation is that internet media could allow voters to receive more negative signals from incumbents in an environment where traditional media is probably captured by government, but they could still be fooled by fiscal policy manipulation. Expectative from voters in the PBC rational models seem too high; they might know that probably during an election year incumbents will behave opportunistically and they can tolerate it if previous year performance was good, but spotting one thing from the other could not be that easy. Nonetheless, results should be taken with caution because of data concerns.

For discussion and future research, I assumed no endogeneity between democracy and media freedom, but relation is not clear. De Haan & Klomp (2013) point out that there is a high correlation between democracy and media freedom indexes. Nevertheless, Freille et al. (2007) finds some evidence for causal relationship from freer press to lower corruption. This endogeneity relationship could be further explored.

If we consider Mexico's broadcast media, the second private TV chain was founded in 1993. In 1997, the PRI lost majority at the federal congress, and in 2000, the presidency. By 2012, the PRI returned to power, but almost loses it due to the unexpected internet effect. This could be investigated in more detail. It is the case that in weak democracies, when new media provider enters the market, it persuades voters to opposition, but then, after a while, they are captured if concentration keeps high (Enikolopov et al. 2011).

Even when robust tests were performed on our results, it could be enlightening if an alternative data base can confirm our estimations. Geolocated-IP data bases are available at some cost; Miner (2015) used similar data for his study. This information could be more reliable.

Also, a model for incumbents that cannot be reelected, in which they are incentivized to make a political career inside their party could change somewhat the expected results. They would not be as motivated as incumbents who want to be reelected. Probably, they would be more into creative accounting up to a certain level that does not damage next party's candidate image.

There's been a recent debate on the polarization effect of internet, specifically in developed countries[35]. Some argue that a fraction of voters is predisposed towards the opposition, and they find information in the internet media that confirm their preconceived judgements (Sustain, 2001; Gentzkow & Shapiro, 2011). Therefore, internet access could polarize the electorate. Similar results to the ones we have would be observed. Unfortunately, our analysis can't differentiate if voters are better observing incumbent's competence, or if they are just being pulled to opposition because of negative signals from internet media or confirmation of their preconceived judgements. It could be that for low levels of democracy, plural information serves to strengthen it, but for high levels, internet media could polarize public opinion. A model in this regard could be developed.

[35] See Solon, Olivia (2016, November 10). Facebook's Failure: Did Fake News and Polarized Politics Get Trump Elected? *The Guardian*. Retrieved from: www.theguardian.com; and Tufekci, Zeynep (2016, November 15). Mark Zuckerberg Is in Denial. *The New York Times.* Retrieved from: www.nytimes.com

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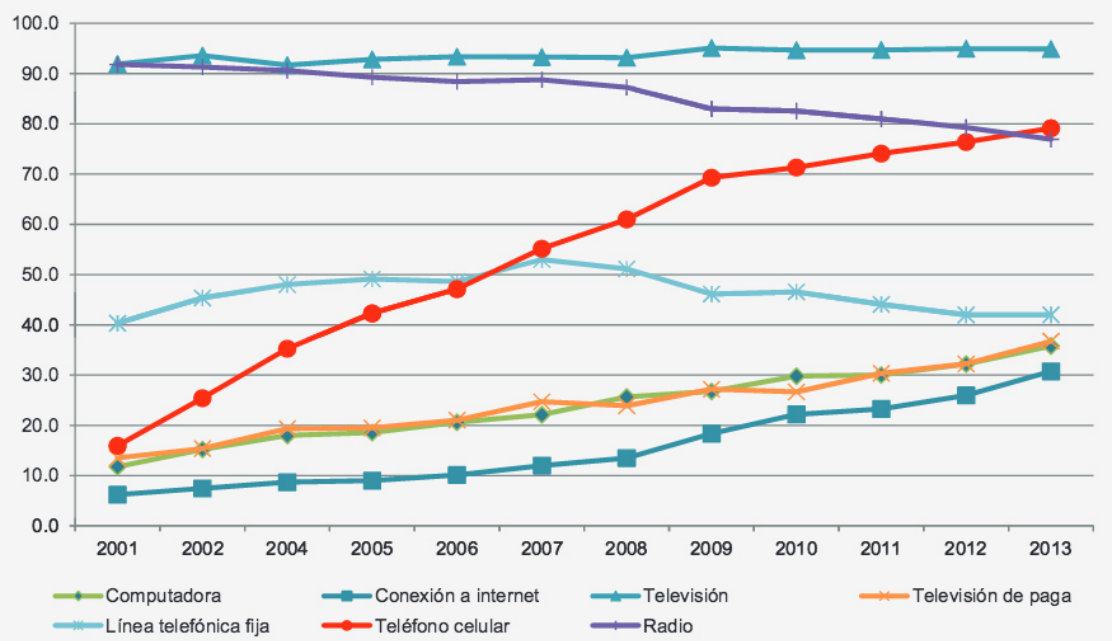
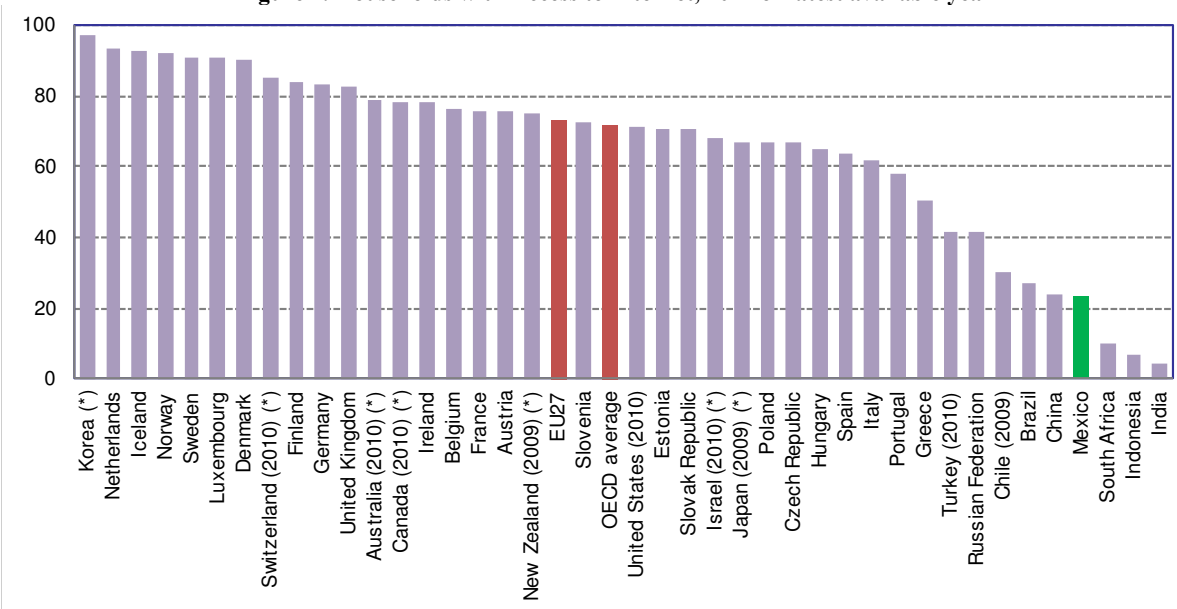
8. FIGURES AND TABLES

Figure 1. Information Devices Growth in Mexico, 2001-2013



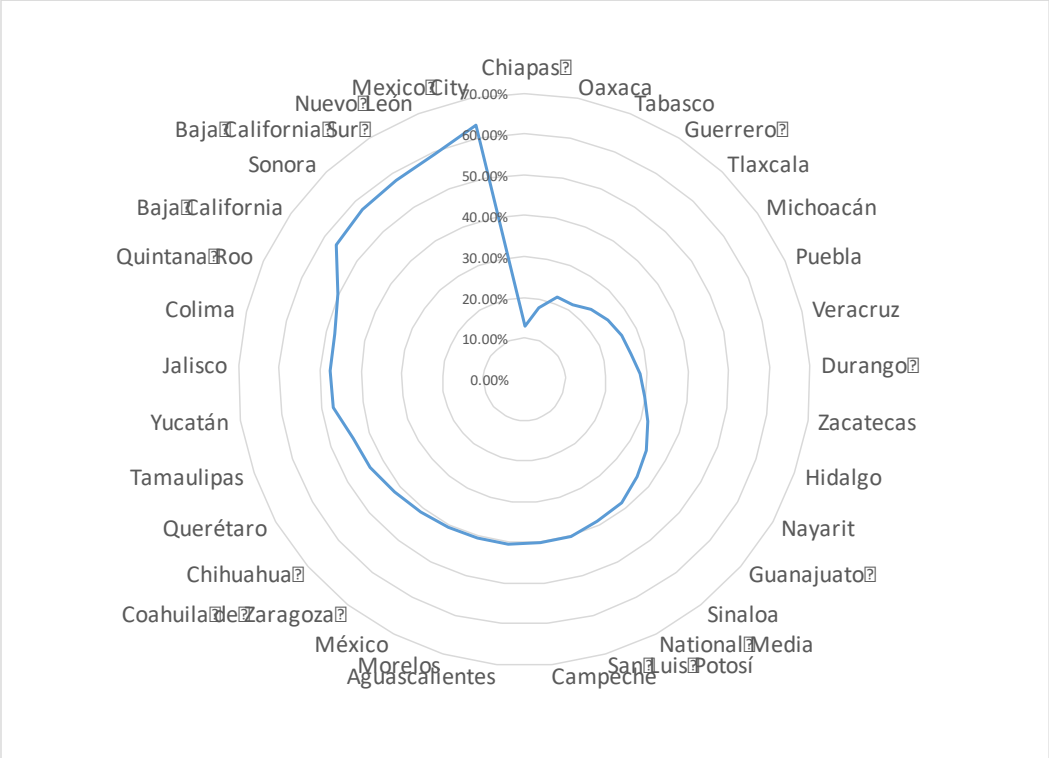
Note: Penetration rates of media devices in Mexican households. Source: INEGI, 2013.

Figure 2. Households with Access to Internet, 2011 or latest available year



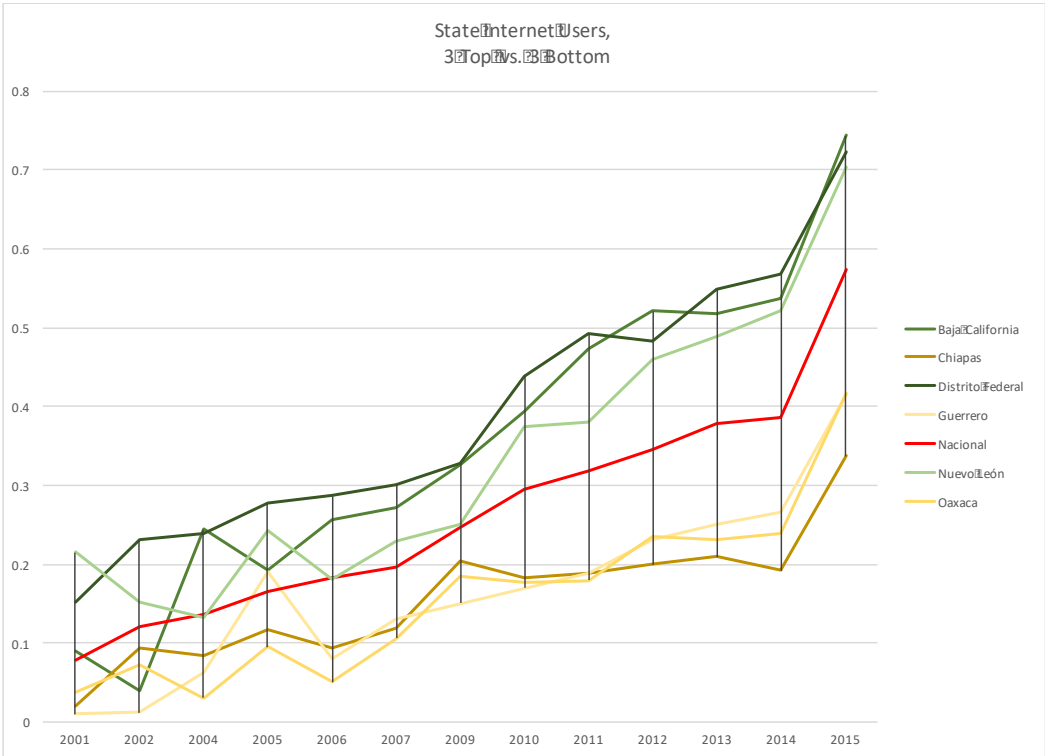
Note: Percentage of Households with access to internet, OECD Countries. Source: OECD with information from OECD, ICT database and Eurostat, Community Survey on ICT usage in households and by individuals, June 2012; and for non-OECD countries: International Telecommunication Union (ITU), World Telecommunication/ICT Indicators 2012 database. Available at: https://data.oecd.org/ict/internet-access.htm

Figure 3. Household Internet Access in Mexico per State, 2015



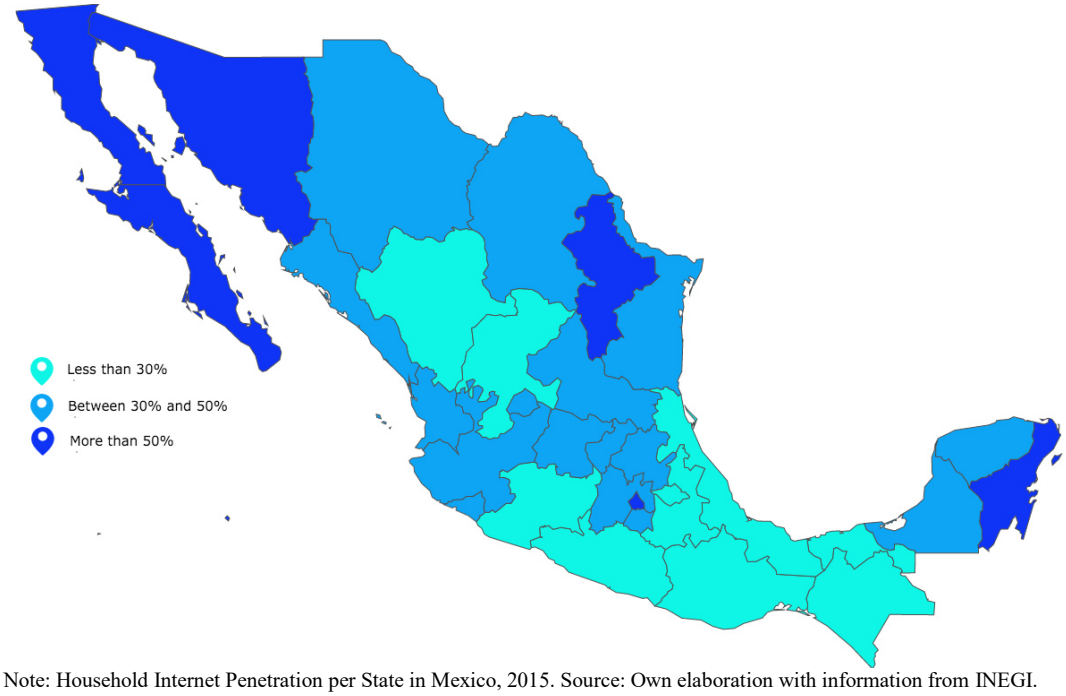
Note: Household Internet Penetration Rates per State in Mexico, 2015. Source: Own elaboration with information from INEGI.

Figure 4. 3 Top vs. 3 Bottom State Internet Users



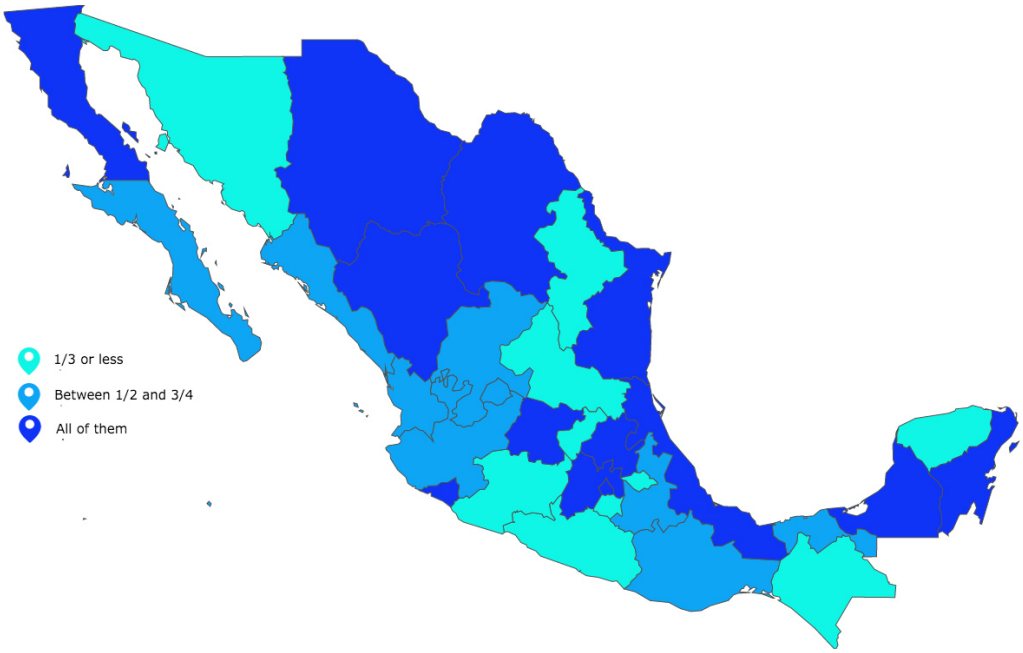
Note: 3 Top vs. 3 Bottom State Internet Users. Source: Own elaboration with information from INEGI.

Figure 5. Household Internet Access Mexico Map, 2015



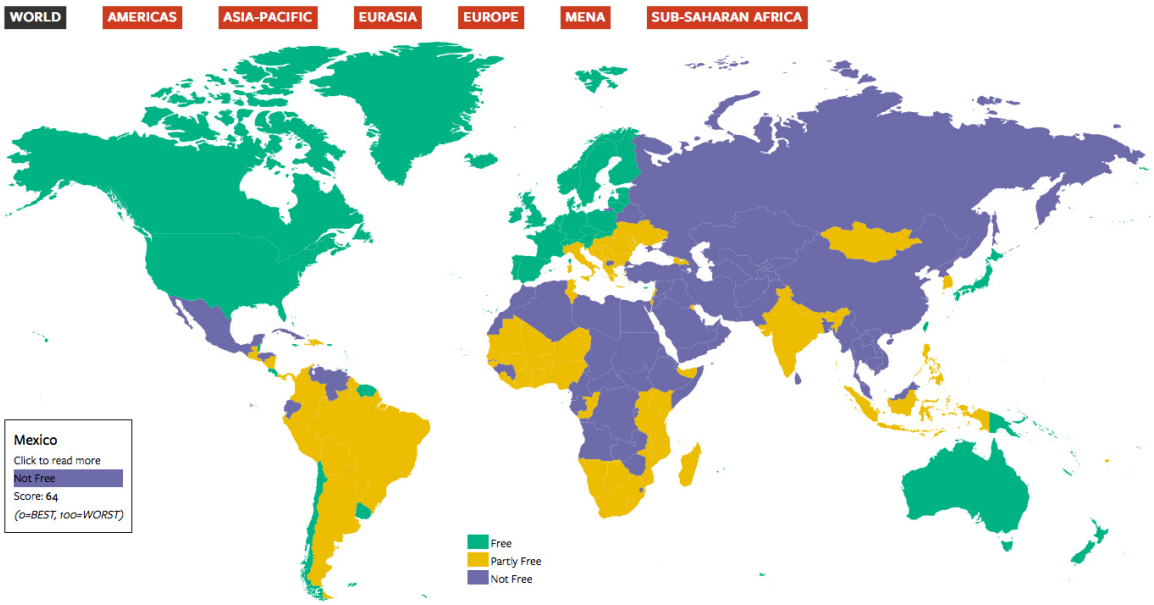
Note: Household Internet Penetration per State in Mexico, 2015. Source: Own elaboration with information from INEGI.

Figure 6. Political Change in Mexico Map, 2000-2015



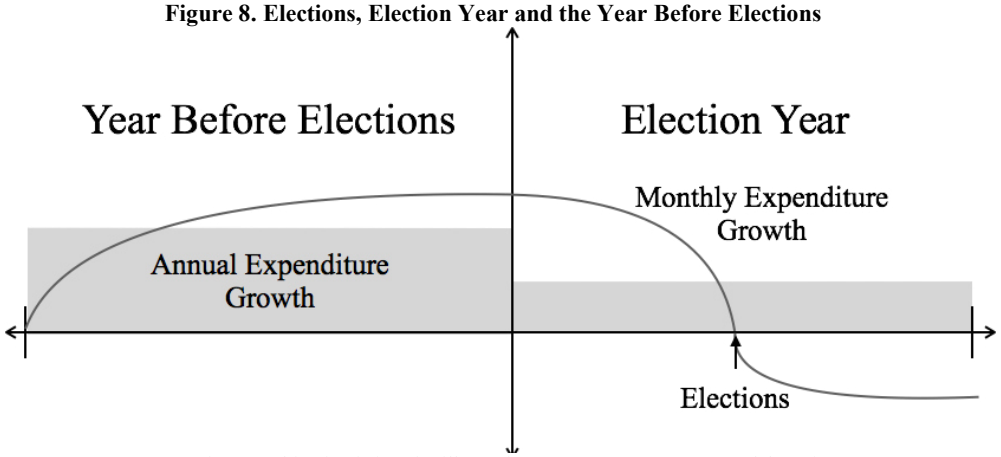
Note: Reelection rate per State (2000-2015). Source: Own elaboration with information from the State Electoral Institutions.

Figure 7. Freedom of the Press in the World, 2015



Source: FreedomHouse.org

Figure 8. Elections, Election Year and the Year Before Elections



Note: Figure's objective is just for illustration purposes. Source: Own elaboration.

Table 1. Description of Variables

Variable	Description	Unit of Measure	Source
Incumbent Party's Vote Share	Fraction of valid votes in favor of the state's ruling party	Percentage	States' IEE
Internet Users$_t$	Fraction of state population that has used internet inside or outside his house in the last twelve months.	Percentage	INEGI
Education$_t$	Fraction of state population that has at least a bachelor's degree.	Percentage	INEGI
Internet Household$_t$	Household Internet Access: fraction of state households that has access to internet.	Percentage	INEGI
PC$_t$	Fraction of state households that have at least one personal computer (desktop, laptop, tablet or notebook).	Percentage	INEGI
TV$_t$	Fraction of state households that have at least one television.	Percentage	INEGI
Pay-TV$_t$	Fraction of state households that have pay-tv service.	Percentage	INEGI
PRI	Equals 1 if the incumbent party during state elections is the PRI, and 0 otherwise.	Dummy	States' IEE
PRD	Equals 1 if the incumbent party during state elections is the PRD, and 0 otherwise.	Dummy	States' IEE
Extraordinary Election	Equals 1 if the election is extraordinary.	Dummy	States' IEE
Unemployment$_t$	State unemployment growth rate of the election year.	Percentage	INEGI
Unemployment$_{t-1}$	State unemployment growth rate of the year before elections.	Percentage	INEGI
GDP per Capita$_t$	State GDP per capita growth of the election year.	Percentage	INEGI, CONEVAL
GDP per Capita$_{t-1}$	State GDP per capita growth of the year before elections.	Percentage	INEGI, CONEVAL
Expenditure$_t$	State expenditure growth rate of the election year. It was estimated with the residual of the total annual expenditures minus the electoral spending.	Percentage	INEGI
Expenditure$_{t-1}$	State expenditure growth rate of the year before elections. It was estimated with the residual of the total annual expenditures minus the electoral spending.	Percentage	INEGI
Time	Ordinary time, starting at 1 for the first election of every state and increasing one unit per election.	Unit	

Source: Own elaboration with information from INEGI, State Electoral Institutes (States' IEE) and CONAPO.

Table 2. Descriptive Statistics

	Obs.	Missing Values	Min.	Max.	Mean	Std. Dev.
Year	85	0	1999	2015	2006.72	4.770
Time	85	0	1	4	1.929	0.842
Incumbent Party's Vote Share	85	0	0.026	0.649	0.439	0.118
Internet $Users_t$	85	0	0.006	0.704	0.218	0.157
$Education_t$	85	0	0.050	0.234	0.137	0.041
Internet $Household_t$	85	0	0.000	0.591	0.150	0.133
PC_t	85	0	0.007	0.589	0.218	0.133
TV_t	85	0	0.659	1.000	0.922	0.077
Pay-TV_t	85	0	0.052	0.728	0.258	0.148
PRI	85	0	0	1	0.624	0.487
PRD	85	0	0	1	0.118	0.324
Extraordinary Election	85	0	0	1	0.047	0.213
$Unemployment_t$	78	7	-0.409	0.988	0.018	0.249
$Unemployment_{t-1}$	80	5	-0.405	0.732	0.066	0.242
GDP per $Capita_t$	78	7	-0.326	0.153	0.031	0.065
GDP per $Capita_{t-1}$	85	0	-0.108	0.262	0.038	0.065
$Expenditure_t$	78	7	-0.398	1.223	0.058	0.165
$Expenditure_{t-1}$	85	0	-0.226	0.437	0.099	0.097

Source: Own elaboration with information from INEGI, State Electoral Institutes and CONAPO.

Table 3. Information Variables Correlation

	Time	Internet Users	Education	Internet Household	PC	TV	Pay-TV
Time	1.000	0.736	0.231	0.650	0.653	0.158	0.596
Internet Users	0.736	1.000	0.624	0.956	0.945	0.299	0.823
Education	0.231	0.624	1.000	0.652	0.681	0.270	0.560
Internet Household	0.650	0.956	0.652	1.000	0.962	0.354	0.811
PC	0.653	0.945	0.681	0.962	1.000	0.422	0.806
TV	0.158	0.299	0.270	0.354	0.422	1.000	0.273
Pay-TV	0.596	0.823	0.560	0.811	0.806	0.273	1.000

Source: Own elaboration with information from INGEI, State Electoral Institutes.

Table 4. Average Partial Effects of State Expenditure Growth on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
$Expenditure_{t-1}$	0.284***	0.246**	0.334***	0.241**	0.251**
	(0.095)	(0.097)	(0.088)	(0.097)	(0.107)
Time		-0.018			-0.010
		(0.011)			(0.010)
GDP per $Capita_{t-1}$			-0.032		
			(0.133)		
$Unemployment_{t-1}$			0.155***		0.125*
			(0.048)		(0.069)
PRI				0.054	0.047
				(0.040)	(0.036)
PRD				-0.069*	-0.067
				(0.039)	(0.041)
Obs.	85	85	80	85	80
Wald Test	18.72	19.06	75.88	44.53	54.89
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.008	0.009	0.072	0.015	0.078

Note: Average partial effects of state expenditure growth of the year before elections on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. All variables are measured as growth rate of the year before elections (t-1) at state level. Time is ordinary time, starting at 1 for the first election of every state and increasing one unit per election. PRI and PRD are dummy variables for political parties. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 5. Average Partial Effects of Information Variables on Incumbent Party's Vote Share

	Incumbent Party's Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Internet Users$_t$	-0.168***					
	(0.057)					
Internet Households$_t$		-0.167**				
		(0.067)				
PC$_t$			-0.165**			
			(0.076)			
Education$_t$				-0.305		
				(0.335)		
TV$_t$					-0.071	
					(0.201)	
Pay-TV$_t$						-0.073
						(0.097)
Obs.	85	85	85	85	85	85
Wald Test	9.58	8.36	7.75	4.71	6.15	6.10
p-value	0.09	0.14	0.17	0.45	0.29	0.30
McFadden Pseudo R^2	0.005	0.004	0.005	0.003	0.004	0.003

Note: Average partial effects of information variables on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. All variables are measured as fraction of state population during the of year elections (t). Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 6. Average Partial Effects of Internet Users and Expenditure on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
Internet Users$_t$	-0.132**	-0.183***	-0.140**	-0.169***	-0.128*
	(0.056)	(0.063)	(0.056)	(0.064)	(0.069)
Expenditure$_{t-1}$	0.237***	0.252***	0.277***	0.276***	0.232**
	(0.085)	(0.079)	(0.087)	(0.087)	(0.097)
GDP per Capita$_{t-1}$		-0.365**		-0.211	-0.137
		(0.181)		(0.168)	(0.195)
Unemployment$_{t-1}$			0.152***	0.133**	0.110
			(0.049)	(0.058)	(0.078)
PRI					0.044
					(0.036)
PRD					-0.063
					(0.049)
Obs.	85	85	80	80	80
Wald Test	22.93	41.91	53.89	60.56	40.93
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.011	0.013	0.074	0.075	0.079

Note: Average partial effects of internet users and expenditure growth on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Internet users is measured as fraction of state population that accessed internet in the past twelve months during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 7. Average Partial Effects of Internet Household and Expenditure on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
Internet Household$_t$	-0.121*	-0.179**	-0.129*	-0.159**	-0.115
	(0.068)	(0.070)	(0.067)	(0.072)	(0.076)
Expenditure$_{t-1}$	0.252***	0.266***	0.297***	0.297***	0.247***
	(0.086)	(0.078)	(0.083)	(0.080)	(0.095)
GDP per Capita$_{t-1}$		-0.332*		-0.174	-0.101
		(0.170)		(0.151)	(0.180)
Unemployment$_{t-1}$			0.156***	0.141***	0.115
			(0.048)	(0.054)	(0.074)
PRI					0.046
					(0.037)
PRD					-0.065
					(0.048)
Obs.	85	85	80	80	80
Wald Test	20.83	36.01	66.42	77.22	39.83
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.010	0.012	0.073	0.074	0.079

Note: Average partial effects of internet household and expenditure growth on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Internet household is measured as fraction of state households that has access to internet during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 8. Average Partial Effects of PC and Expenditure on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
PC_t	-0.108	-0.175**	-0.150**	-0.187**	-0.125
	(0.078)	(0.085)	(0.076)	(0.083)	(0.086)
$Expenditure_{t-1}$	0.253***	0.261***	0.293***	0.292***	0.253***
	(0.089)	(0.083)	(0.085)	(0.084)	(0.098)
GDP per $Capita_{t-1}$		-0.334*		-0.194	-0.106
		(0.182)		(0.158)	(0.181)
$Unemployment_{t-1}$			0.168***	0.153***	0.130*
			(0.050)	(0.055)	(0.071)
PRI					0.051
					(0.039)
PRD					-0.051
					(0.052)
Obs.	85	85	80	80	80
Wald Test	19.94	30.42	61.73	68.52	36.37
p-value	0.01	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.011	0.013	0.074	0.075	0.079

Note: Average partial effects of PC and expenditure growth on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. PC is measured as fraction of state households that owns a personal computer (desktop, laptop, tablet) during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 9. Average Partial Effects of Education and Expenditure on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
$Education_t$	-0.165	-0.200	-0.482*	-0.490*	-0.392
	(0.358)	(0.361)	(0.293)	(0.292)	(0.334)
$Expenditure_{t-1}$	0.282***	0.297***	0.324***	0.327***	0.268***
	(0.093)	(0.091)	(0.087)	(0.086)	(0.104)
GDP per $Capita_{t-1}$		-0.188		-0.046	-0.010
		(0.160)		(0.142)	(0.156)
$Unemployment_{t-1}$			0.169***	0.165***	0.134*
			(0.051)	(0.055)	(0.073)
PRI					0.048
					(0.037)
PRD					-0.062
					(0.051)
Obs.	85	85	80	80	80
Wald Test	19.05	28.16	66.06	72.81	40.05
p-value	0.01	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.010	0.011	0.073	0.074	0.079

Note: Average partial effects of education and expenditure growth on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Education is measured as fraction of state population that has at least a bachelor's degree during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 10. Average Partial Effects of TV and Expenditure on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
TV_t	0.001	-0.060	-0.091	-0.098	0.106
	(0.209)	(0.227)	(0.213)	(0.238)	(0.247)
$Expenditure_{t-1}$	0.292***	0.307***	0.333***	0.335***	0.282***
	(0.094)	(0.093)	(0.090)	(0.090)	(0.105)
GDP per $Capita_{t-1}$		-0.184		-0.051	0.036
		(0.165)		(0.154)	(0.151)
$Unemployment_{t-1}$			0.159***	0.155***	0.128*
			(0.044)	(0.049)	(0.075)
PRI					0.053
					(0.036)
PRD					-0.071
					(0.043)
Obs.	85	85	80	80	80
Wald Test	20.53	29.53	74.37	83.03	50.04
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.009	0.010	0.072	0.072	0.079

Note: Average partial effects of TV and expenditure growth on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. TV is measured as fraction of state households that owns at least one television during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 11. Average Partial Effects of Pay-TV and Expenditure on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
Pay-TV_t	-0.030	-0.064	-0.068	-0.081	0.003
	(0.103)	(0.111)	(0.101)	(0.106)	(0.109)
$Expenditure_{t-1}$	0.277***	0.290***	0.316***	0.318***	0.268**
	(0.101)	(0.094)	(0.094)	(0.092)	(0.110)
GDP per $Capita_{t-1}$		-0.228		-0.094	0.009
		(0.181)		(0.149)	(0.170)
$Unemployment_{t-1}$			0.158***	0.150***	0.121
			(0.047)	(0.051)	(0.073)
PRI					0.044
					(0.037)
PRD					-0.079*
					(0.046)
Obs.	85	85	80	80	80
Wald Test	18.99	38.38	61.75	69.92	67.47
p-value	0.01	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.008	0.009	0.072	0.072	0.078

Note: Average partial effects of Pay-TV and expenditure growth on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Pay-TV is measured as fraction of state households that has the service of paid-tv during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 12. Average Partial Effects of Expenditure on Incumbent Party's Vote Share at Different Levels of Internet Users' Distribution

	Incumbent Party's Vote Share				
$Expenditure_{t-1}$ at:	(1)	(2)	(3)	(4)	(5)
$Internet\ Users_t$ [= 5%]	0.239***	0.254***	0.279***	0.279***	0.233**
	(0.085)	(0.079)	(0.087)	(0.088)	(0.097)
$Internet\ Users_t$ [= 25%]	0.237***	0.251***	0.276***	0.276***	0.231**
	(0.085)	(0.079)	(0.087)	(0.087)	(0.097)
$Internet\ Users_t$ [= 45%]	0.234***	0.246***	0.273***	0.271***	0.229**
	(0.084)	(0.078)	(0.087)	(0.087)	(0.097)
$Internet\ Users_t$ [= 65%]	0.230***	0.239***	0.268***	0.265***	0.225**
	(0.084)	(0.078)	(0.087)	(0.087)	(0.096)
$Internet\ Users_t$ [= 85%]	0.225***	0.231***	0.261***	0.256***	0.220**
	(0.083)	(0.078)	(0.087)	(0.088)	(0.096)
Obs.	85	85	80	80	80
Wald Test	22.93	41.91	53.89	60.56	40.93
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.011	0.013	0.074	0.075	0.079

Note: Average partial effects of expenditure growth at different levels of internet users' distribution on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Equations (1), (2), (3), (4) and (5) correspond to equations (1), (2), (3), (4) and (5) of table 6 respectively. Internet users is measured as fraction of state population that accessed internet in the past twelve months during the of year elections (t). Expenditure is measured as growth rate of the year before elections (t-1) at state level. Control variables are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 13. Auxiliary OLS Regressions to Control for Time and Education Effects

	Internet Users		
	(1)	(2)	(3)
Time	0.132***	0.077**	-0.162
	(0.010)	(0.029)	(0.144)
$Time^2$		0.013*	0.131*
		(0.007)	(0.072)
$Time^3$			-0.017
			(0.011)
$Education_{t-1}$	1.534***	1.570***	1.440***
	(0.254)	(0.280)	(0.262)
Constant	-0.247***	-0.205***	-0.048
	(0.039)	(0.039)	(0.082)
Obs.	85	85	85
Adjusted R squared	0.86	0.86	0.87
F statistic	109.82	72.32	75.35
p value	0.000	0.000	0.000

Note: Regression results of equations (4), (5) and (6) using OLS with state fixed effects and robust standard errors. Explained variable is internet users. Internet users is measured as fraction of state population that accessed internet in the past twelve months during the of year elections (t). Time is ordinary time, starting at 1 for the first election of every state and increasing one unit per election. Squared time and cubic time are included in equations (2) and (3). Education is measured as fraction of state population that has at least a bachelor's degree during the of year elections (t). Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 14. Descriptive Statistics of Estimated Residuals of Auxiliary OLS Regressions

	Obs.	Missing Values	Min.	Max.	Mean	Std. Dev.
$\hat{\varepsilon}_{it}$	85	0	-0.1084	0.1804	0.0000	0.0495
$\hat{\gamma}_{it}$	85	0	-0.1035	0.1770	0.0000	0.0488
$\widehat{\omega}_{it}$	85	0	-0.0996	0.1688	0.0000	0.0480

Note: Summary statistics of estimated residuals $\hat{\varepsilon}_{it}, \hat{\gamma}_{it}$, and $\widehat{\omega}_{it}$ of equations (1), (2) and (3) of table 12 respectively.

Table 15. Robust Estimations of Internet Users' ($\hat{\varepsilon}_{it}$) Average Partial Effects on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
Internet Users$_t$ ($\hat{\varepsilon}_{it}$)	-0.421***	-0.420**	-0.409**	-0.384***	-0.300**
	(0.159)	(0.165)	(0.165)	(0.140)	(0.149)
Time	-0.011		-0.011	-0.008	-0.010
	(0.010)		(0.010)	(0.010)	(0.010)
Education$_t$		-0.186	-0.084	-0.017	-0.307
		(0.406)	(0.424)	(0.410)	(0.338)
Expenditure$_{t-1}$				0.220***	0.239***
				(0.065)	(0.087)
GDP per Capita$_{t-1}$					-0.146
					(0.186)
Unemployment$_{t-1}$					0.102
					(0.077)
PRI	0.066*	0.070	0.069	0.062	0.051
	(0.039)	(0.043)	(0.043)	(0.043)	(0.038)
PRD	-0.070*	-0.064	-0.059	-0.051	-0.056
	(0.040)	(0.050)	(0.051)	(0.049)	(0.051)
Obs.	85	85	85	85	80
Wald Test	56.49	55.01	58.86	90.90	129.87
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.014	0.014	0.014	0.018	0.081

Note: Time-and-education robust estimations of internet users' average partial effects on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Internet Users ($\hat{\varepsilon}_{it}$) variable is the estimated residuals of equation (1) of table 12. Time is ordinary time, starting at 1 for the first election of every state and increasing one unit per election. Education is measured as fraction of state population that has at least a bachelor's degree during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 16. Robust Estimations of Internet Users' ($\hat{\gamma}_{it}$) Average Partial Effects on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
Internet Users ($\hat{\gamma}_{it}$)	-0.405**	-0.410**	-0.397**	-0.372**	-0.323**
	(0.177)	(0.179)	(0.177)	(0.150)	(0.159)
Time	-0.012		-0.012	-0.008	-0.010
	(0.010)		(0.010)	(0.010)	(0.010)
$Education_t$		-0.200	-0.096	-0.026	-0.291
		(0.405)	(0.417)	(0.408)	(0.341)
$Expenditure_{t-1}$				0.225***	0.244***
				(0.068)	(0.088)
$GDP\ per\ Capita_{t-1}$					-0.161
					(0.202)
$Unemployment_{t-1}$					0.105
					(0.080)
PRI	0.072**	0.075*	0.074*	0.066	0.059
	(0.037)	(0.041)	(0.040)	(0.041)	(0.037)
PRD	-0.060	-0.060	-0.054	-0.048	-0.058
	(0.039)	(0.047)	(0.048)	(0.048)	(0.050)
Obs.	85	85	85	85	80
Wald Test	33.99	41.30	42.84	80.05	118.65
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.015	0.015	0.015	0.019	0.081

Note: Time-and-education robust estimations of internet users' average partial effects on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Internet Users ($\hat{\gamma}_{it}$) variable is the estimated residuals of equation (2) of table 12. Time is ordinary time, starting at 1 for the first election of every state and increasing one unit per election. Education is measured as fraction of state population that has at least a bachelor's degree during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).

Table 17. Robust Estimations of Internet Users' ($\widehat{\omega}_{it}$) Average Partial Effects on Incumbent Party's Vote Share

	Incumbent Party's Vote Share				
	(1)	(2)	(3)	(4)	(5)
Internet Users ($\widehat{\omega}_{it}$)	-0.438**	-0.439**	-0.428**	-0.398**	-0.359**
	(0.176)	(0.178)	(0.179)	(0.156)	(0.171)
Time	-0.011		-0.011	-0.008	-0.010
	(0.010)		(0.011)	(0.011)	(0.010)
$Education_t$		-0.182	-0.083	-0.008	-0.281
		(0.416)	(0.434)	(0.422)	(0.354)
$Expenditure_{t-1}$				0.215***	0.228***
				(0.068)	(0.086)
$GDP\ per\ Capita_{t-1}$					-0.188
					(0.210)
$Unemployment_{t-1}$					0.094
					(0.079)
PRI	0.063*	0.068*	0.067*	0.052	0.042
	(0.036)	(0.041)	(0.041)	(0.041)	(0.038)
PRD	-0.074*	-0.069	-0.064	-0.058	-0.067
	(0.039)	(0.047)	(0.048)	(0.047)	(0.049)
Obs.	85	85	85	85	80
Wald Test	35.18	45.28	48.21	75.03	245.34
p-value	0.00	0.00	0.00	0.00	0.00
McFadden Pseudo R^2	0.014	0.014	0.014	0.018	0.080

Note: Time-and-education robust estimations of internet users' average partial effects on incumbent party's vote share using a fractional probit model. Incumbent party's vote share is the fraction of valid votes in favor of the state ruling party. Internet Users ($\widehat{\omega}_{it}$) variable is the estimated residuals of equation (3) of table 12. Time is ordinary time, starting at 1 for the first election of every state and increasing one unit per election. Education is measured as fraction of state population that has at least a bachelor's degree during the of year elections (t). Expenditure, GDP per capita and unemployment measured as growth rates of the year before elections (t-1) at state level. Time average of explanatory variables, extraordinary election dummy, and intercepts for each different quantity of observations per state are not displayed. Standard errors are shown in parenthesis. Significance levels are indicated at 90% (*), 95% (**), and 99% (***).